

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

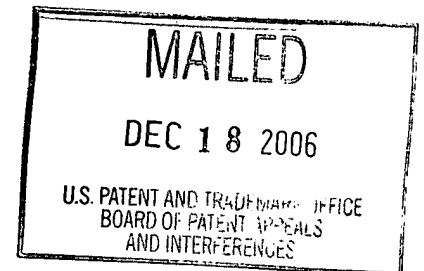
**UNITED STATES PATENT AND TRADEMARK OFFICE**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Ex parte GEORGE W. HAWKINS

Appeal No. 2006-2204  
Application No. 09/605,766

ON BRIEF



Before MILLS, GREEN, and LINCK, Administrative Patent Judges.

MILLS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1, 36, 38-60, and 64.

Claims 1, 39, 43, 48, and 64 read as follows:

1. An apparatus for performing biological reactions comprising:
  - (a) a substrate comprising a first and a second surface;
  - (b) an array of biomolecular probes positioned on said first surface; and
  - (c) a flexible layer affixed to said first surface by an adhesive layer, forming a reaction volume; and
  - (d) at least a first port into said reaction volume; wherein said first port extends through said flexible layer.
39. An apparatus according to claim 1 wherein said substrate comprises glass.
43. An apparatus according to claim 1 wherein said biomolecular probes are anchored to said first substrate using polyacrylamide.

48. An apparatus according to claim 1 wherein said flexible layer comprises plastic.

64. An apparatus according to claim 1 wherein said reaction volume further comprises a water-soluble compound that is a solid at room temperature and a liquid at a second, higher temperature.

The prior art cited by the examiner is:

Besemer et al. (Besemer)	5,945,334	Aug. 31, 1999
Van Antwerp et al. (Van Antwerp)	5,786,439	July 28, 1998
Cottingham	WO 97/10056	Mar. 20, 1997
Bjornson et al. (Bjornson)	WO 99/19717	Apr. 22, 1999

Rehman et al. (Rehman), "Immobilization of acrylamide-modified oligonucleotides by co-polymerization," Nucleic Acids Research, Vol. 27, No. 2, pp. 649-655 (1999)

#### Grounds of Rejection

Claims 1, 36, 38<sup>1</sup>, 40, 45, 47, 49, and 57 stand rejected under 35 U.S.C. § 102(b) over Cottingham.

Claims 43 and 44 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Rehman.

Claims 48, 50-56, and 60 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Bjornson.

Claims 39, 41, 42, 46, 58, and 59 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Besemer.

---

<sup>1</sup> The examiner's rejection includes claim 37 which has been cancelled. We assume this is a typographical error and that the examiner instead meant to include claim 38 as part of the rejection.

Appeal No. 2006-2204  
Application No. 09/605,766

Claim 64 stands rejected under 35 U.S.C. § 103(a) over Cottingham in view of Van Antwerp.

We affirm these rejections.

### Claim Grouping

Appellant argues each rejection separately, but does not argue individual claims within each rejection. Therefore, we select claims 1, 39, 43, 48, and 64, as representative of the rejected claims. 37 C.F.R. § 41.37(c)(1)(vii) (September 13, 2004).

### DISCUSSION

#### Anticipation

Claims 1, 36, 38, 40, 45, 47, 49, and 57 stand rejected under 35 U.S.C. § 102(b) over Cottingham.

The standard under § 102 is one of strict identity. Under 35 U.S.C. § 102, every limitation of a claim must identically appear in a single prior art reference for it to anticipate the claim. Gechter v. Davidson, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997). Every element of the claimed invention must be literally present, arranged as in the claim. Richardson v. Suzuki Motor Co., Ltd., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

According to the examiner, Cottingham teaches each of the claimed apparatus elements, with particular reference to pages 10 and 13. (Answer, pages 3-4)

We find the examiner has provided sufficient evidence to support a prima facie case of anticipation. However, before addressing the examiner's prima facie case in detail, we interpret the scope of the claims before us. We particularly address the claim terminology "comprising."

The term "comprising" is inclusive and does not exclude additional, unrecited elements or method steps. E.g., Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 1271, 229 USPQ 805, 812 (Fed. Cir. 1986). In our view, the transitional phrase "comprising" in claim 1, makes the apparatus claim open ended and does not exclude additional, unrecited elements. Therefore, though claim 1 recites a substrate and flexible layer, claim 1 is open ended and does not exclude additional layers of material.

According to the Examiner (Answer, page 3)

Cottingham et al. teach an apparatus for performing biological reactions (see whole doc. esp. abstract & figure 4, DNA amplification and probe assay device) comprising a substrate (see page 13 line 3-4 DNA card with bottom and top layer) and an array with biomolecular probes positioned on first surface (see page 10 lines 1-15 teaching an array arrangement of DNA amplification and assay reagents which includes primers and probes spotted on surface) and flexible layer affixed to first surface by an adhesive layer forming reaction volume (see page 13 lines 9 & 10 adhesive binding a plastic film) and port (see page 13 line 21 & last line air vent and sample port). The ports extend through flexible layer (see Figure 4 detail 28 & 26). . . . They teach [that the] apparatus may further comprise [a] measuring instrument and heated carrier (see figure 13 detail 80, 81 and page 21 first full paragraph).

In view of the above disclosure, the examiner concludes that Cottingham anticipates each element of claim 1. Id. Where the prior art prima facie anticipates the claimed invention, the burden then falls on an appellant to rebut that prima facie case. Such rebuttal or argument can consist of any other argument or presentation of evidence that is pertinent. E.g., In re Dillon, 919 F.2d 688, 692-93, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990).

Appellant responds to the examiner's prima facie case, arguing that Cottingham "does not teach or disclose an array of biomolecular probes positioned in the first surface of the substrate within a reaction volume (or sample chamber), but rather teaches a plurality of sample chambers contained on the Card, each sample chamber containing a single spot of reagent (see e.g., page 13, line 16)." Brief, page 6 (emphasis added).

However, claim 1 on appeal merely recites, "(b) an array of biomolecular probes positioned on said first surface," and thus, does not require that the biomolecular probes be within a reaction volume, as argued by appellant. (Emphasis added.) Cottingham discloses that, "[d]ried DNA amplification and assay reagents are adhered to the upper interior wall of each sample cell 22 in the form of a single, discrete spot 30." Page 10, lines 1-4. Therefore, Cottingham describes an array of biomolecular probes positioned on a first surface, as claimed.

Appellant further argues that nothing in Cottingham discloses that the sample chambers are watertight. Brief, page 6. We are not persuaded by this argument. As

recognized by the examiner, claim 1 does not recite or require that the sample chambers be watertight. Furthermore, claim 1 does not exclude embodiments wherein the samples are not watertight.

Additionally appellant argues that Cottingham does not disclose or suggest a middle layer and the use of the open ended claim language "comprising" does not change this. Brief, page 7. Again, we are not persuaded by appellant's argument. Cottingham describes a device for DNA amplification having three layers. Cottingham, page 13, lines 1-10. These layers are preferably made of plastic film of a thickness of no more than 0.015 inches (i.e., the plastic layers would be understood by those of ordinary skill in the art to be inherently flexible) and are held together by a pressure sensitive adhesive. Id. Therefore, Cottingham does describe a substrate comprising a first and a second surface; an array of biomolecular probes positioned on said first surface; and a flexible layer affixed to said first surface by an adhesive layer, forming a reaction volume, as claimed. Cottingham particularly describes that the top layer of the device for DNA amplification contains holes that form sample ports. See, e.g., page 15, 2<sup>nd</sup> full paragraph. The lower surface of the top layer forms the upper walls of the sample chambers and the middle layer forms the side walls of the sample chamber. Id. The bottom layer forms the lower wall of the sample chamber. Id. Thus, the port of Cottingham extends through the middle plastic layer or flexible layer, satisfying the requirements of claim 1.

In view of the above, we find the examiner has established a prima facie case of anticipation which has not been convincingly rebutted by appellants on the basis of argument or evidence. The rejection of claim 1 for anticipation over Cottingham is affirmed. Claims 36, 38, 40, 45, 47, 49, and 57 fall with claim 1.

#### Remaining Rejections

Claims 39, 41, 42, 46, 58 and 59 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Besemer. Claims 43 and 44 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Rehman. Claims 48, 50-56, and 60 stand rejected under 35 U.S.C. § 103(a) over Cottingham in view of Bjornson. Claim 64 stands rejected under 35 U.S.C. § 103(a) over Cottingham in view of Van Antwerp.

For each of these remaining obviousness rejections appellant does not argue the merits of the rejections in detail. The examiner also recognizes this, stating that "Appellant relies upon overcoming Cottingham in order to overcome the obviousness rejection[s]." Answer, page 10. Also note Brief, pages 10, 12, 14, and 16.

As previously discussed, we find the examiner has indicated the specific relevance of Cottingham to the pending claims. Appellant has not argued the merits of the obviousness rejections over Cottingham in view of Besemer, Rehman, Bjornson or Van Antwerp. Appellant merely relies on the previously addressed deficiencies of Cottingham alone (as discussed in the context of the anticipation rejection). In view of the above, we affirm each of the obviousness rejections based on the reasoning outlined herein with

Appeal No. 2006-2204  
Application No. 09/605,766

respect to the relevance of the disclosure of Cottingham.

#### Other Issue for Consideration

Upon return of the application to the Examining Corps, and in the event of further prosecution of the application, the examiner should note the following. The specification makes reference to many figure elements which do not appear in the drawings. For example, page 14 of the specification references Figure 3, reference element 14, which does not appear in the figure. In addition, page 16 of the specification makes reference to figure element numbers 70, 72, 74, 76, 78, and 80, which are not depicted in any of the figures. Upon return of the application, the examiner should carefully review the specification and drawings for incongruities, and require amendment of the specification and/or drawings as appropriate. See, e.g., MPEP § 601.01(g).

#### CONCLUSION


The rejection of claims under 35 U.S.C. § 102(b) over Cottingham is affirmed. The rejection of the claims under 35 U.S.C. § 103(a) for obviousness over Cottingham in view of Besemer, Rehman, Bjornson or Van Antwerp is affirmed.



Appeal No. 2006-2204  
Application No. 09/605,766

No time period for taking any subsequent action in connection with this appeal  
may be extended under 37 CFR § 1.136(a).

AFFIRMED

  
Demetra J. Mills  
Administrative Patent Judge

  
Lora M. Green  
Administrative Patent Judge

  
Nancy J. Linck  
Administrative Patent Judge

)  
)  
)  
)  
) BOARD OF PATENT  
)  
) APPEALS AND  
)  
) INTERFERENCES  
)  
)  
)

Appeal No. 2006-2204  
Application No. 09/605,766

GE Healthcare Bio-Sciences Corp.  
Patent Department  
800 Centennial Ave.  
Piscataway, NJ 08855